

Glen Canyon Dam Adaptive Management Work Group (AMWG)
FINAL Minutes of January 17-18, 2002, Meeting
Phoenix, Arizona

Conducting: Stephen Magnussen, USBR
Recorder: Linda Whetton, USBR

January 17, 2002
Convened: 9:35 a.m.

Welcome and Introductions: Stephen Magnussen introduced himself as the Secretary's Designee and Chairman of the AMWG. He welcomed the members, alternates, and visitors to the meeting.

Roll Call: The members introduced themselves and identified whether they were a member or alternate. A quorum was established and attendance sheets (*Attachment 1*) were distributed.

Dave Sabo announced this would be his last AMWG meeting as he has taken a job with the Bureau of Reclamation and will be the new Area Manager for the Klamath Falls office.

Administrative Items: Steve announced he recently retired and updated the members on what has been happening with him. He said Secretary Norton intends to appoint Michael Gabaldon as the new Designee/Chairman for the AMWG and sent out a letter to the AMWG informing them of this change

Mike said in his new position as the Director of Policy, Management, and Technical Services, he reports directly to Commissioner John Keys. As the new designee, he is committed to carrying forth recommendations from the AMWG to Secretary Norton. He has a very good working relationship with the Commissioner, Asst. Secretary Bennett Raley, and with Secretary Norton and her staff so he feels there will be very good access to the Secretary as the AMP process moves forward.

Review of Ground Rules - Amy Heuslein reviewed the AMWG Ground Rules (*Attachment 2*) for the members and went over logistics and security for the building.

Clarification on Agenda - Rick Johnson asked for clarification on why the AMWG Operating Procedures (*Attachment 3*) were on the agenda for approval when the April 12-13, 2001, meeting minutes indicated they had been approved. The recorder said that was an error in the minutes because changes to the renewed charter (1/10/01) had not been incorporated into the revised Operating Procedures. The April minutes will be corrected.

MOTION: Approve the April 12-13, 2001, Meeting Minutes.

Motion seconded.

Discussion: None

Public Comments: None.

Voting Results: Yes = 22 No = 0 Abstained = 0

MOTION PASSED pending the above correction to the minutes.

MOTION: Approve the revised AMWG Operating Procedures.

Motion seconded.

Discussion: None

Public Comments: None

Call for Question.

Voting Results: Yes = 24 No = 0 Abstained = 0

MOTION PASSED.

Executive & Legislative Updates: Randy Peterson distributed a letter from the Acting Asst. Secretary, Policy, Management, and Budget dated June 19, 2001 (*Attachment 4*), regarding tribal funding for participation and consultation within the Adaptive Management Program. This letter directs the Interior agencies associated with the GCD AMP to contribute appropriated funds for the participation and consultation with the tribal governments in this process. In FY 2001 the total contribution amounted to \$125,000; in FY 2002, the total amount will come to \$375,000; and FY 2003, the amount will be \$475,000.

Introduced Legislation: Randy passed out copies of H.R. 4 (*Attachment 5a*), the Energy Security Act. It has been passed by the House and referred to the Senate. This bill is very comprehensive and includes not only the immediate issue of addressing the California power situation that occurred in 2000-01 but now includes such titles as energy conservation, increased hydroelectric generation capacity, and a provision for the ANWR exploration for oil. It is a very controversial bill. The Senate has not taken action on it. He passed out Sections 6401 (*Attachment 5b*) and 6403 (*Attachment 5c*) that call for the Secretary of the Interior to investigate facilities under her jurisdiction to identify those which could, with new construction or with existing facilities, increase the generation capacity. It's a call for study rather than a directive to change Reclamation operations or facilities immediately. There have been other bills introduced in the House but they haven't had any action since May-August 2001: HR 2436, 2587, 1664, 1468, and 1647. In addition, Senator Murkowski introduced Senate bill 389 last February but there has been no action on that as well.

Strategic Plan Update: Mary Orton said she was here on behalf of the Ad Hoc Committee on Strategic Planning (AH CSP) and has been facilitating with the AMWG and TWG on the Strategic Plan (*Attachment 6*) since 1999. She recognized the members of the ad hoc group and brought the AMWG members up to date with what they have accomplished:

- Vision and Mission was approved in July 1999
- Goals and Principles were approved in January 2000
- The TWG voted unanimously in March 2001 to recommend AMWG approval of the management objectives. That recommendation came too late in March for the April meeting. It was to be acted upon at the July 2001 meeting, which was canceled, and then the September 2001 meeting was canceled. The ad hoc group and the TWG moved forward on completing the Strategic Plan.
- The qualitative targets for each management objective were approved, half in January 2001 and half in April 2001.

The information needs and the management actions are yet to be developed. Today's agenda item will consider the unanimous recommendation from the TWG to approve the AMP Strategic Plan – vision, mission, principles, goals, and management objectives – including the narrative section of the plan. She directed the members to look at the Introduction Section and Section III, Supplemental Information. She reminded the members that each time they've approved a section, they've been very explicit about the fact that after finishing the next step, they might have to go back and change what they've approved before. The only piece that hasn't changed so far is the Vision and Mission, but even that could change. She is anticipating that as they move forward and craft the INs and MAs, some previously approved items may also change.

Mary asked if an AH CSP member wanted to make a motion to recommend the Strategic Plan be forwarded to the Secretary of the Interior for approval. Wayne Cook said that as they got into the Information Needs activities and began having more discussions about sideboards and applying them to the INs, there was some redundant language. In an effort to not repeat the same language, he suggested adding a sentence in the Strategic Plan and said Dave Sabo had drafted some language. Dave passed out a copy of his proposed language to be included as the first bulleted item on page 2 of the draft Strategic Plan (8/17/01 version) under the heading "Glen Canyon Dam Adaptive Management Program Defined" (*Attachment 7*) which reads:

The purpose of the AMP is to evaluate how well the selected alternative meets the resource management objectives of the EIS in response to the GCPA.

Rick Johnson said he didn't agree with how the language was worded. He said one of the things that needs to be done in this program is to evaluate how well the selected alternative meets the resource management objectives of the GCPA. The purpose of the AMP is spelled out in the AMWG Charter, under Scope and Objectives. This prompted other concerns from the members:

- Revisit the language in the AMWG Charter so that it is consistent with what is being proposed in the Strategic Plan.

- The purpose of the Strategic Plan should've been written down years ago. It needs to be crafted very carefully.
- Rather than talk about the purpose of the AMP, are there funding questions that need to be addressed. Is the word "funding" missing from the paragraph?
- The AMWG needs to tell the GCMRC what they are going to do and if they run out of money, then prioritize the work plans.
- Lack of time in today's meeting to consider the proposed language.

Mary suggested the INs or MOs be put in some sort of order to give GCMRC direction in developing their annual plan. Rick Johnson said this was something the AHCSF discussed for a long time because of multiple jurisdictions and overlapping responsibilities. The AHCSF chose to think of them in terms of nested sets and believed prioritization should occur below the goal level with the management objectives and information needs.

Rod Kuharich said he thought the sticking point might be defining the purpose, and suggested that the language be changed to a bullet that reads: "evaluate how well the selected alternative meets the resource management objectives of the EIS in response to the GCPA." Rod proposed dropping the words "and the purpose of the AMP is to." This would go on page 2 under the first set of bullets.

A member suggested a motion to table discussion on the language, but the chairman said he would like to have the discussion continued in an effort to reach consensus.

Rod said that in regards to the last phrase *of the EIS in response to the GCPA*, he read an excerpt from the Committee Report on passing the GCPA: "It is the expectation of the Committee that the interim operating criteria, the EIS, and the long-term operating criteria will address releases from Glen Canyon Dam by adjusting fluctuating water releases and adjusting rates as well, changes minimizing flood releases, maintaining sufficient minimum flow releases, and limiting maximum flow releases during normal operations if needed taking into account other non-operational measures may be appropriate." He feels the language should be considered as a bullet.

Various versions of the language were considered by the group, including:

- Evaluate how well the selected alternative meets the resource management objectives of the EIS, ROD, and the GCPA.
- Evaluate how well the selected alternative meets the resource management objectives of the EIS in response to the GCPA and other authorities under the law.
- Evaluate how well the preferred alternative of the EIS ROD and other management actions meet the goals of the GCPA while protecting a mix of benefits defined in the EIS ROD.
- Evaluate how well the preferred alternative of the EIS ROD and other management actions meet the goals of the GCPA and a mix of benefits defined in the EIS ROD.
- The AMP evaluates how well the preferred alternative of the EIS/ROD and other management actions meet the goals of the GCPA and the mix of resource benefits in the EIS/ROD.
- Evaluate how well the selected alternative and actions taken pursuant to other authorities meet the goals and objectives of the Adaptive Management Program.

Wayne Cook said that during the EIS process the Secretary considered a number of concepts in developing a suite of benefits and posed several questions:

- Does including the EIS in there then protect the suite of benefits?
- In acting on those other authorities, can the Secretary do things to the resources so as not to mess up water or power operations in order to fix?
- Do the other authorities then limit the amount of loss or risk to power and water that the process had to engage in to fix the canyon?
- Are we reinventing that concept and vision?

Since there was a lack of consensus among the members, Geoff Barnard asked the Chairman to accept his motion to table the discussion. The Chairman said he had hoped for consensus but agreed to accept the motion.

MOTION: Move to table the discussion.

Motion seconded.

Discussion: The members continued to discuss the proposed language.

Motion withdrawn.

MOTION: *To add as the second bullet on page 2 of the strategic plan, under “Glen Canyon Dam Adaptive Management Program Defined, “The AMP evaluates how well the preferred alternative of the EIS ROD and other management actions meet the goals of the GCPA and the mix of resource benefits defined in the EIS ROD.”*

The motion was seconded.

Public Comments: None

Voting Results: Yes = 22 No = 0 Abstained = 1

Robert Begay (abstaining): I’m unsure what the Navajo Nation recognizes on this.

MOTION PASSED.

Additional concerns were raised:

- Need to fill in the blanks on MOs within next 2 years
- Prioritize the MOs
- AHCSPP to create a time table for completing and prioritizing MOs
- Address MO 7.3, quality of water issue
- Wyoming stakeholder office name is not correct
- Navajo & Hopi can establish their own water quality programs

ACTION: Referred to the Ad Hoc Committee on Strategic Planning the development of a process and timeline for the following, in order to complete the Strategic Plan: prioritization, MAs and INs, and identification of which MOs are in and which are out of the AMP. The AHCSPP is to take its recommendation to the TWG before reporting to the AMWG at its next meeting.

ACTION: Referred to the Ad Hoc Committee on Strategic Planning consideration of the addition of a new Management Objective 7.3. Maintain suitable water quality in GCD releases to meet downstream Management Objectives. The AHCSPP is to take its recommendation to the TWG before reporting to the AMWG at its next meeting.

MOTION: Recommend the Strategic Plan to the Secretary of the Interior as adopted and as amended with the language changes made today:

- Add to the Strategic Plan in Chapter 1, in the section “Adaptive Management Program Organizational Framework,” subsection “Glen Canyon Dam Adaptive Management Program Defined,” top of page 2, second bullet: “The AMP evaluates how well the preferred alternative of the EIS/ROD and other management actions meet the goals of the GCPA and the mix of resource benefits in the EIS/ROD.”
- On the bottom of page 4, in the section “Adaptive Management Program Organizational Framework,” subsection “Organizations and Positions With the Glen Canyon Dam Adaptive Management Program,” under the heading “Adaptive Management Work Group,” second set of bulleted items; change “Wyoming Interstate Streams Engineer” to “Wyoming State Engineer’s Office.”

Motion seconded.

Discussion: None

Public Comments: Thank you Mr. Chairman. My name is David Orr. I’m with the Environmental and Social Justice Organization known as Living Rivers. We have offices here in Arizona and in also in Utah. I’ll be

making a more detailed set of comments later but in response specifically to the Strategic Plan, I wanted to raise a couple of points that I hope you will take into consideration, both for today and also for the future. It's one of the concerns that our organization has that it has been difficult for us to decide or to ascertain exactly where the decision point is for intervening in providing input to this body on the strategic planning process. We have not been involved in the adaptive management program organization but we have been attending some Technical Work Group meetings over the last six months or so. It's our understanding that you've already voted on the Vision and Mission and the Principles and Goals and so we're not asking you to revisit that today although the comments that we will be submitting will address concerns that we have with some of those points. I just wanted to raise a couple of general observations that I hope will help inform your thoughts. In general, we're concerned that the statement of principles and goals appear to be or could be interpreted to be implicitly prioritizing and if that is not the case, we would ask that you so declare that. There is also no specific mention of whether any of the principles and goals are specifically worthy of funding priority. We do note there is a reference that some of these principles and goals do not fall under the responsibility of the adaptive management program but as a member of the public, I have no way of knowing which of those responsibilities you believe are within the purview of this body so there are some essentially very vague statements being made in terms of how can the public know who to turn to to address specific problems that we would like to see taken care of. We also noticed there has been talk about a cap on funding, specifically for hydropower revenues and that, in turn, implies to us that some prioritizing of the strategic plan goals and principles will be occurring accordingly so we would like to see some statement from this body that would address whether there is in fact a policy that you are going to limit the funding for this program or not. We would like to see you address this concern to the Secretary because we think there is a possibility that there will be efforts to continue whatever funding limitations there are today in the future. Let me address specifically Goal #4, maintain a naturally reproducing population of rainbow trout. We cannot find any legal authority for the adaptive management program to consider this a goal of the program. We would like to have some clarification especially given the apparent conflicts between goals for recovering native fish and the requirement that trout have for maintaining cold water temperatures year round. Finally, maintain power production capacity and energy generation and increase where feasible and advisable in the framework of the ecosystem goals of the adaptive management program. It is our understanding that hydropower production should not be considered to be of equal priority to native ecosystem restoration goals and we have very serious concerns that we will talking about later that will point to a need for looking at providing for or allowing for reduction in hydropower production and we are concerned that the wording of this goal will make that more difficult so without further detail, I appreciate the opportunity to speak to you.

Voting Results: Yes = 24 No = 0 Abstained = 1

MOTION PASSED.

Amy Heuslein (abstaining): The reason I abstained is that I don't have a clear picture of the public process for the Strategic Plan. I recognize that we've gotten the opportunity for the public to attend our AMWG and TWG meetings, but I don't know where the public process is for the decision making to include this in her decision on accepting the Strategic Plan or even if there is a public process.

Mary reminded the AMWG members that what they had recommended to the Secretary of the Interior with their motion was approval of the vision, mission, principles, goals, management objectives, qualitative targets, and narrative sections along with the amendments approved at today's meeting.

Relocation of GCMRC: Barry introduced Denny Fenn, Associate Director for Biology at the USGS, and Anne Kinsinger, Regional Biologist for the Western Region. They are here today to talk about the upcoming transfer of the GCMRC from the headquarters of the USGS to the Western Region consistent with the regional reorganization the USGS is undergoing and to answer any questions or concerns the AMWG has.

Denny said over the last year and a half, Barry has reported to him in the headquarters office. When the USGS started a reorganization process, the director undertook to make the USGS more alike across the disciplines and more uniform in its operations as well as make it closer to its clients and partners out in the field. A lot of supervisory responsibilities and direct line management control were transferred to three new regional directors at the senior level that didn't exist before. As a result, most of the science centers and other science capabilities

in the field now report directly to the regional director. The GCMRC is one of the few offices that continued over the last year or so to report to an associate director in headquarters. He explained that it's basically an internal administrative matter that won't affect the day-to-day operations but it is important the AMWG knows why the transfer is being made. He introduced Anne Kinsinger.

Anne said she wanted to reinforce that the USGS values the adaptive management program and is looking forward to working with the AMWG. In response to a question on base funding, she wanted to assure the AMWG that the current \$250,000 in base funding would continue. She said she had heard there were some concerns about whether the cost of doing business might change because of the realignment and the answer is no. Denny added they have tried for two years to get \$1 million of additional base funding into the USGS program for the GCMRC to be able to take some of the pressure off the power revenue funds for the AMP. Those budget proposals were not accepted into the President's budget that went to Congress. The same thing is going to be true in 2003. He said Director Groat has continued to try that process but recognizes that when constituents in the field, user groups, non-governmental organizations, and other government agencies tell Congress to support the program, Congress listens. He encouraged the AMWG to continue to look for opportunities, both collectively as well as individually, to say the GCMRC needs that support through the USGS.

Humpback Chub – Steve Gloss said he would cover the most up to date information they have on the status and trends of Humpback chub in the Grand Canyon. The majority of work was done by Lew Coggins (GCMRC) and Carl Walters (University of British Columbia) who was a consultant with the GCMRC. There was also a lot of work from cooperating agencies like the Arizona Game and Fish Dept. and the Fish and Wildlife Service. He proceeded with a PowerPoint presentation (***Attachment 8***).

Rick Gold said that some folks are now suggesting that this is the silver bullet and asked Steve how he would characterize the definitiveness of it. Steve said he thinks the model and the statistical and mathematical stock assessment approach to arriving at credible numbers about recruitment is the best approach, but there is still uncertainty in their understanding of cause and effect relationships.

Native Fish Work Group Report - Dennis Kubly said he made a presentation to the AMWG approximately two years ago asking them to support the formation of a native fish work group (NFWG), a group founded along the lines of the Kanab Ambersnail Work Group (KAWG) and ancillary to the program providing technical input on the subject of native fishes. The NFWG is a group of managers and researchers and he serves as the informal secretary of that group. He proceeded with a PowerPoint presentation on non-native fish control (***Attachment 9***).

Loretta asked when the group was going to look at the issue of non-native fish coming up from Lake Mead. Dennis said there is an evaluation phase that needs to occur in any future action but they do think there is enough known about certain species to give credence to control actions being taken against them. They don't mean to exclude fish coming up from Lake Mead but that is something to be evaluated. Loretta reminded Dennis to consult with the tribes per NHPA and Section 106.

Rod commented that the key for the Colorado River Program is the attempt at predator control as well as introduction of the native fish in a size that they will tend to survive. They found when fish are in captivity, they breed quite abundantly so actually having viable population to put into the streams is not a problem. Dennis said that's another frustration of having the non-native fish there because it precludes successfully introducing fish of the size which are most easy to produce.

Dennis thought non-native fish control was something the AMWG might deliberate and perhaps make a recommendation on and then the most appropriate agencies, organizations, tribes, would conduct that activity.

Rick Johnson distributed copies of a motion (see below) he wanted to make. He said members from the Experimental Flows Ad Hoc Group, the Native Fish Work Group, and other individuals met in mid-December to talk about the options and what things could be done

MOTION: In support of Goal 2, the AMWG recommends the following actions:

1. Control brown trout in Bright Angel Creek during CY 2002-2006;
2. Evaluate monitoring and control methods for channel catfish and carp in LCR during CY 2002;
3. Implement control efforts for channel catfish and carp in the LCR during CY 2003-2006; and
4. Establish a TWG ad hoc committee to develop a 2002-2006 research, monitoring, and management work plan for meeting MO 2.5 and MO 2.6. This ad hoc group will report back to the AMWG at the next meeting.

Motion seconded.

Discussion.

AMENDED MOTION: In support of Goal 2, the AMWG recommends the following actions:

1. Evaluate methods to remove non-native fish from Bright Angel Creek in 2002;
2. Evaluate methods to remove non-native fish from the LCR in 2002;
3. Gather public input and conduct public education and environmental compliance on long-term removals in #1 and #2 above;
4. Establish a TWG ad hoc committee to develop a 2002-2006 research, monitoring, and management work plan for meeting MO 2.5 and MO 2.6 of the 17 August 2001 draft of the AMP Strategic Plan. The TWG will report back to the AMWG at the next meeting.
5. Using data from #1-#4 above, make recommendations on future removals.

Amended motion seconded.

Discussion. The members raised the following issues:

- MO 2.5 and 2.6 numbers (in the Final Draft INs document) may change given the above options
- Obtain public input before doing any implementation
- Consider what is going to be implemented in 2002-3-4 and the next 5-10-15 years
- Reminder that full NEPA and ESA compliance includes public input
- What level of compliance is needed?
- Identification of MO 2.5 and 2.6 included in motion?

Leslie James asked if the work was included in the budget and Randy said that Reclamation has committed dollars to install the weir on Bright Angel and fund the research regarding catfish and carp removal in the LCR for the first year. After that they would be looking to the Park Service for the long-term funding proposal.

Rick Johnson said he feels a sense of urgency in that the HBCs are in decline and feels it's time to act. Sam Spiller said he was sensitive to what Rick said but knows the Arizona Game and Fish Department has a very important constituency there and any work that is done must assesses those public users to the satisfaction of AGFD.

AMENDED MOTION: In support of Goal 2, the AMWG recommends the following actions:

- 1a. Evaluate brown trout in Bright Angel Creek during CY 2002;
- 1b. Control brown trout in Bright Angel Creek during 2003-2006,
2. Evaluate methods to remove non-native fish from the LCR in 2002;
3. Gather public input and conduct public education and environmental compliance on long-term removals in #1 and #2 above;
4. Establish a TWG ad hoc committee to develop a 2002-2006 research, monitoring, and management work plan for meeting MO 2.5 and MO 2.6 of the 17 August 2001 draft of the AMP Strategic Plan

AMENDED MOTION (first line): In support of goal 2, the AMWG recommends the following actions **subject to environmental compliance** and the rest of the motion stays the same.

AMENDED MOTION (first line): add **"to include recreational use, ESA, and consultation with the tribes."**

Amended motions seconded.

Public Comment (Barry Gold): You've just seen in Steve's presentation that we've gotten to the point where funds are available to provide a monitoring program that can actually identify the effects of what your actions are. Randy said this was funded for the first year but you need to recognize there is going to be a need to bring the funding to the table so we can do this work and not cannibalize existing programs. I just raise the caution. MOTION TABLED in order for Rick Johnson and Bruce Taubert to rewrite the motion and present at tomorrow's meeting.

Sediment Monitoring Report – Matt Kaplinski said he and Ted Melis would give joint reports on the current status of sediment monitoring, activities, and new scientific information. He said the Sediment Ad Hoc Group was formed in response to a memo from David Rubin and other scientists (August 2000) working with the GCMRC looking at sediment deposition and transport in the CRE. With assistance from GCMRC, the Sediment AHG developed a white paper (*Attachment 10a*) and are presenting it to the AMWG today. Matt proceeded with a PowerPoint presentation (*Attachment 10b*) but couldn't complete it due to time constraints. Randy Peterson will finish up the presentation at tomorrow's meeting.

Adjourned: 5 p.m.

Glen Canyon Dam Adaptive Management Work Group (AMWG)
Minutes of January 17-18, 2002, Meeting
Phoenix, Arizona

Conducting: Michael Gabaldon, USBR
Recorder: Linda Whetton, USBR

January 18, 2002
Convened: 8 a.m.

Welcome and Introductions: Michael Gabaldon introduced himself as the Secretary's Acting Designee and Chairman of the AMWG. He welcomed the members, alternates, and visitors to the meeting.

Roll Call: The members introduced themselves and identified whether they were a member or alternate. A quorum was established and attendance sheets were distributed.

Administrative Items: Randy announced the GCMRC is going to have a Survey Protocol Evaluation Panel the week after next in Flagstaff. If anyone is interested in attending, they need to contact Mike Liszewski.

Review of Agenda Items: Mike said today's meeting would begin with: 1) motion prepared by Rick Johnson and Bruce Taubert regarding non-native fish control, 2) remainder of the sediment presentation, 3) Kanab ambersnail presentation, and 4) public comment by Living Rivers.

Non-Native Fish Control – Rick Johnson passed out a revised motion (*Attachment 11*).

AMENDED MOTION: In support of goal 2, the AMWG recommends the following actions subject to environmental compliance to include assessing recreational use, ESA, and consultation with tribes:

1. Evaluate methods to remove non-native fish from Bright Angel Creek in 2002
2. Evaluate methods to remove non-native fish from the LCR in 2002
3. Gather public input and conduct public education and environmental compliance on long-term removals in #1 and 2 above,
4. Establish a TWG ad hoc committee to develop a 2002-2006 research monitoring and management work plan for meeting MO 2.5 and 2.6 of the August 17, 2001, Draft of the AMP Strategic Plan. The TWG will report back to the AMWG at the next meeting,
5. Using data from #1-4 above to make recommendations on future removal.

AMENDED MOTION: Amend #1 above: "evaluate methods to remove non-native fish, **except rainbow trout**, from Bright Angel Creek in 2002."
Amended motion seconded.

Call for the question.

Public Comments: (David Orr from Living Rivers)- It would be appreciated if we could have some clarification of point #5. The concern I'd like to express is that I think there is plenty of evidence that future removal needs to be done and I guess I'm just concerned with the open-ended nature of #5 and would like to see some sort of time limit or other sort of clarification on what the table would be for addressing non-native fish in the mainstem below the dam.

AMENDED MOTION (line 1): In support of goal 2, the AMWG recommends the following actions subject to environmental compliance to include assessing recreational use, ESA, in consultation with the tribes **and other affected state agencies**.

AMENDED MOTION seconded.

Voting results: Yes = 18 No = 0 Abstained = 1

Loretta Jackson (abstaining): I do support but still think the whole river system should be looked at, that the removal should also have suggested there would be reintroduction of the native species of a type of protocol like that.

MOTION PASSED.

Sediment AHG Presentation (cont) – Randy Peterson said that yesterday's presentation laid the groundwork regarding sediment storage in the Grand Canyon. He said he would finish up with the recommendations made

by the sediment researchers and then conclude with the TWG's response to those recommendations. He proceeded with the remainder of the PowerPoint presentation (*Attachment 12*)

In response to the fact that sediment storage was declining, the Rubin, et al memo provided the following options to counter that:

- 1) Implement BHBFs in the fall immediately following after tributary inputs.
- 2) Maintain low flows after these sediment inputs until BHBFs could be released or
- 3) Add sediment downstream (adding sediment might also have to be accompanied by some type of high releases in order to conserve the sediment once it's introduced into the system)

Leslie said from the graphs presented yesterday that it didn't appear the LSSF helped with sediment storage and she feels there needs to be a real compelling reason for doing another low flow if there isn't going to be a big benefit to sediment storage. Ted said that the proposed fish experiment in 2000 actually turned out to be the most ideal sediment experiment that could've been designed and that the low flow period actually recorded aggradation of sand inputs but also silt inputs which they didn't predict would occur. The unfortunate part is that they didn't have a lot of sand to push during that 3-month period. They did have a sizeable sand input but unfortunately it occurred in mid-October after the second spike had occurred and after the low flow period was over.

Randy said the key is to time the high flows with high sediment concentrations. It's one of the questions the experimental flow program will have to address. Randy said the AHG has some concerns with implementing the Rubin et al recommendations because of compliance with Law of the River. The ad hoc group is suggesting a couple of additional ideas (included the in the report) and are also asking AMWG to remand the TWG develop an experimental flow program. The specifics of the magnitude, duration, timing, etc., will be confirmed later by the Experimental Flows Ad Hoc Group.

MOTION: The AMWG Concurs with the findings of the TWG White Paper on Sediment.

Motion seconded.

Discussion:

Rod said he could not agree with the recommendations, and that approximately \$40-50 million has been spent on this program over the past 5-6 years to only come up with a conclusion that it didn't work. The AMWG is now being asked to look at something more drastic than the initial BHBF proposal of 45,000 cfs. He said he'd agree to powerplant capacity at 31,500, to a minimum of 5,000, and at ramping because it may be more flexible but he has a problem giving the go ahead for something more drastic. He said when the dam is load following (depicted in graphs on pages 10-11), even though there is a net loss, there is a degree of stability in sediment transport and sediment holding. The trouble occurs when the system has been flushed out of sediment with the high flow and not had any sediment inputs to sustain the system. He strongly suspects it's somewhat related to the grain size of the sediment where the extreme fine sediment may be acting as the glue has been washed out and the coarse fine sediment has nothing to cling to. He thinks Reclamation should put something in writing if they propose to do high flows and assume the emergency spillways will be used to facilitate those flows.

Rick Gold said he wanted to clarify the motion, that it says the AMWG is concurring with the TWG's White Paper which essentially moves toward determining a flow regime rather than adopting a flow regime.

Pam Hyde stated she has been with the AMP program for quite some time and questioned what the program's response is in dealing with a situation different from what was thought when the EIS was being developed. She said the AMP was designed with flexibility and a large part of that flexibility is experimentation. She thinks the AMP needs to be bold in experimenting to figure out what can be done within the confines of the program. If the AMP is just an attempt to maintain as much status quo as possible, it's going to fail. She advised the AMWG to think long and hard about how they vote on some of the sediment issues because it's really important to the program.

Public Comments: (David Orr) Living Rivers supports efforts to implement the adaptive management part of the Adaptive Management Program. We think it is important if this program is to function the way it was designed to give the managers the flexibility to do the science driven management experiments that are indicated by the scientific researchers. To not do that seems to indicate a lack of willingness on the part of the body to comply with the intent and purpose, not only of the ROD but also the Grand Canyon Protection Act.

Voting Results: Yes = 22 No = 1 Abstained = 0

MOTION PASSED.

John Shields commented that the report is in a very rough format – no date when it was prepared, typographical errors, lack of explanation relative to key issues, and no corresponding attachments. He said the members might have had difficulty understanding it because of its presentation. He said he voted against it because he didn't feel it was in good enough shape for the AMWG to consider.

MOTION: Reconsider the vote just taken based on John Shields' observations.

Motion seconded.

Discussion: The members discussed the need for this document and future documents to be more professionally prepared but also felt minor errors should not prevent the AMWG from accepting the TWG's recommendation.

Public Comments: None

Motion withdrawn.

Seconded withdrawn.

Andre said that the AMWG should direct the TWG to prepare some kind of plan and that the TWG should get together with the Experimental Flows Ad Hoc Group and the Sediment Ad Hoc Group to integrate a plan that will work for a number of resources to test the hypotheses and then report back to the AMWG. He said he would like to form a motion around that.

MOTION: In concert with RPA flows for native fish, during 2003 request that the GCMRC, in consultation with the TWG, design an experimental flows sequence that tests hypotheses for conservation of sediment, and report to AMWG in April 2002 on the proposed flow sequence.

Motion seconded.

Discussion: The following issues were raised:

- The TWG needs to be given specific direction → new paradigm for sediment conservation
- Above language would cause more controversy than it will resolve
- Better understanding of what "in concert with RPA flows for native fish" for this year means
- Are we in a 8.23 maf release year? What do we do?
- Sediment flows shouldn't be continued when implementing the RPA flows for native fish. Don't tie the two together or you may not get either one.
- Suggest an amendment that says the experiment flow regime needs to be implemented in 2002-2003, not designed in 2003.

Rick Gold said he wanted the AMWG to consider two things: 1) If we're trying to implement an experimental flow in 2002, we may have a difficult time if the AMWG doesn't approve that until April. It's a recommendation to the Secretary in April. Can we react in 2002? 2) He doesn't think the AMWG is going to be able to set aside the requirements of the RPA in order to do an experiment relative to sediment so his sense is those have to be in concert unless FWS says something different. Right now, the intent for 2002 is to do ROD operations and get a dataset to compare with the low flow test done before.

Rick said it was Reclamation's intent in 2002 to run a series of ROD flows as part of compliance with the RPA. If they're going to follow the ROD, they don't have any specific high flows or specific low flows designed into the 2002 year. He asked if the GCMRC was prepared to do that monitoring.

Barry said if they do have part of HMFs in the fall, there will be some additional trips that have to be scheduled in order to pick up the data after the event. The sandbar measuring trip is going down this year and that would give them pre-HMF data but then they would have to pick up the post HMF data. Once they see what is offered, they will be able to determine what needs to be added.

Rick Gold emphasized that the Bureau of Reclamation is operating in 2002. They started the 2002 AOP on October 1 and are almost four months into the 2002 water year as determined through the AOP process. He cautioned that a lot of things start to happen when they tinker with a particular month or a particular season in a year.

Rod Kuharich called for the question on the motion. He felt the AMWG had sufficient leeway to go either way with flow recommendations. The Chairman did not recognize the call for the question.

AMENDED MOTION: In concert with RPA flows for native fish flows, to be implemented in 2002-2003 request that the GCMRC, in consultation with the TWG, design an experimental flow sequence that tests hypotheses for conservation of sediment. Report to AMWG in April 2002 on the proposed flow sequence.

Public Comments: None

Call for question.

Voting Results: Yes = 8 No = 11 Abstaining = 1

Amended motion fails.

Voting Results on Original Motion: Yes = 20 No = 0 Abstaining = 1

MOTION PASSED.

Amy Heuselin (abstaining): I guess I'm just concerned with the issue regarding the 2002-2003, that is not clear to me as far as what that actually means, whether or not we're able to do something come the fall because of the AOP issue or if that's a moot point.

Public Comment by Living Rivers - Thank you Mr. Chairman. We appreciate the opportunity to make a few brief comments to this body. My name is David Orr with Living Rivers. My office is in Moab and we also have an office in the Phoenix metro area. I would like to recognize John Weisheit who is on our staff and in the audience today. We are submitting and distributing to you a copy of a letter (***Attachment 12***) that we hope you will give consideration to. This letter addresses concerns that our group and seven other organizations want to share with you regarding the Strategic Plan that you just adopted and also addressing some shortcomings that we see with the Adaptive Management Program as it is operated over the course of the last 5+ years.

We have some concerns that despite the good science and the strong contribution to the body of knowledge about the Grand Canyon Ecosystem that the adaptive management actions that are indicated by the Record of Decision and the Grand Canyon Protection Act and the Biological Opinion have not always been taken and, of course, the indication of the success or failure of the efforts of this body are felt and seen in the canyon. And I think it is at a point of 5 years after creation of this adaptive management program that it is worth taking a look back and recognizing that as Barry Gold pointed out earlier there has been tremendous forward motion in our understanding of the system but at the same time there has also been a recognition of some other members of the panel have alluded to today that the assumptions that went into the ROD, the assumptions that have been driving a lot of the management actions have been shown through experimentation not to be indicated in the future for success in terms of trying to get this canyon restored and what is it going to take to get these fish, get the aquatic invertebrates, the base of the food chain, back to healthy levels. It's going to take I think some more give than we have had evidence of in the last five years. I alluded to some of these concerns yesterday in my comments on the Strategic Plan. Giving the rainbow trout an equal or even a potentially higher priority than some of the ecosystem restoration goals raises a question as to what are the priorities of this program and what is this program suppose to be accomplishing under law. We haven't seen any indication that there is any legal authority to use this adaptive management program as a way of producing and maintaining a healthy rainbow trout population below Glen Canyon Dam and similarly we haven't found in law any requirement that maximizing to whatever extent feasible the generation of hydroelectricity when that may be contraindicated by the Biological Opinion flows or sediment experimentation flows. We are concerned that the primary and stated

goals of this program have not been phrased in such a way in the Strategic Plan that make it clear that restoration of the Grand Canyon Ecosystem is the top priority of this program. We would like to see the AMWG address these concerns and we would also like to see that more public involvement be encouraged. Our organization has gone out and talked to folks around the region and talked to folks who haven't been involved in this program. Many people don't even know this program exists. We believe in order for the adaptive management of the Grand Canyon, this world heritage site, is an important resource and treasure and needs to be informed by public sentiment, public interest, and we will continue to make every effort to inform the public about the issues and the concerns and the opportunities that exist to do a better job and to ask the hard questions and to make the sacrifices and we will be recommending, as we have in our letter and as we will be communicating to the news media later today, we think it's worth people being willing to make a few dollars' sacrifice on their utility bill for example. This gets back to contingent evaluation and that discussion. What is it worth to do the right thing? We ask you to take particular care and give and give particular consideration to these natural values and the need to respect and protect and restore those ecosystem functions and processes and the very base of the food chain, the very species that are required by the Grand Canyon Protection Act and all the other Park Service laws and regulations that ought to be there. It's been 40 years since the gates closed on Glen Canyon Dam almost and a lot has changed since then. Your Strategic Plan says "irreversible changes." We question that and if they are irreversible, that raises the question why we're even having these discussions. I thought that the whole point of adaptive management was to try to address these problems. We ask you to look at that. We ask you to provide the funding necessary to do the science. When we hear from scientists that they are being limited by the amount of money that they have to get their work done, that raises the question of the commitment of this body to see through this process. We implore you for the sake of the canyon. We implore you in order to restore and protect those archaeological resources that are at risk from continued flows that don't protect and store that sediment. We also ask you to consider what happens at the end of a reasonable period of time with the best science available and having implemented the management actions accordingly, what happens if you conclude that you're not able to get that sediment necessary to protect those archaeological and cultural resources, you're not able to restore those beaches. That's the elephant that is standing in the room and those are the kinds of questions that I think ultimately this body will be having to address but as for today and for the coming few months, we encourage you to do your necessary duty to implement management actions that you have been asked to support and we appreciate it when you do that. We encourage the scientists to keep on doing the good work they're doing and let's encourage the public to be involved and give them an opportunity to have their say in this process as well. Thank you.

Wayne Cook asked if Living Rivers supports the Secretary of Interior's Preferred Alternative action in the EIS?

David Orr responded that as an organization, they didn't exist at the time the EIS was prepared. At this point in time because it has the force of law, they hope that that is being implemented. They believe that the new information on Humpback chub population trends and decline suggest that a supplemental EIS or at least a new ROD is indicated so in that sense the 1996 ROD and Preferred Alternative creates a framework for adaptive management.

Rick Johnson said feels the AMWG needs to consider public comments. Living Rivers presented a 10-page letter and even though he said he was not suggesting they talk about any of the details in the letter, he suggested it be remanded to the Ad Hoc Committee on Strategic Planning for consideration. He feels the AMWG has an obligation and a responsibility to respond to the letter.

MOTION: Remand the Living Rivers letter to the AMWG Ad Hoc Committee on Strategic Planning for consideration.

Motion seconded.

Public Comments: None

Discussion: The members raised the following concerns:

- AMWG has been working on the Strategic Plan for two years and just approved and shouldn't accept comments from Living Rivers or from other interest groups this late in the process.

- Since AMWG makes recommendations to the Secretary on public resources, it is obligated to consider comments received from the public.
- Workload required to respond to this letter and any other subsequent letters.
- How should AMWG respond to public comments.
- AMWG members should carefully read the letter to see if it is going to temper future decisions AMWG makes regarding how the program moves forward.
- How do AMWG members inform their constituencies?
- Lack of time for AMWG to adequately read/respond to Living Rivers letter at today's meeting.

Voting results: Yes = 3 No = 14 Abstaining = 2

MOTION FAILS.

Joe Alston (abstaining) - I haven't had a chance to read the letter so I don't know what's really in here and what it states. The letter seems to be two parts, one is a list of concerns the group has about this group itself and that's up to the Secretary. She can make her own decisions on that part of the letter and that's the appropriate place for it to go. The second part has to do with the Strategic Plan. It seems like we've gone quite a ways down that process and I'm not sure it makes a lot of sense to revisit the Strategic Plan at this point. On the other hand I'm not sure that we have, just by this last conversation, given adequate thought to what we should be presenting to the public and what public involvement should be.

Mike said that since the letter is addressed to him and copied to the Secretary and others so they will reach their intended targets. The members will consider the comments they heard today and determine what needs to be done in future meetings.

Kanab Ambersnail – Bob Winfree said that in 1999 representatives from several AMP organizations invited a panel of scientists to review the information about the Kanab ambersnail and prepare a report of recommendations. The Kanab Ambersnail Ad Hoc Group (KAS) was charged by the TWG to evaluate the panel's report, prepare a draft response for TWG and AMWG. The independent Kanab Ambersnail Working Group (KAWG), a distinct group separate from the KAS, also reviewed the panel's report. The KAS reviewed the KAWG's response to the panel's report and commented on that and the report is in the meeting packet (*Attachment 13a*) He also distributed copies of a one-page recommendation page (*Attachment 13b*).

The report is divided into four parts: 1) Summary of Recommendations, 2) Resource Management questions that were identified and addressed, 3) Issues that were addressed by the Expert Panel, and 4) Recommendation made by the panel and the KAWG. The KAS identified five questions that needed to be considered by the TWG and AMWG. Bob said he wanted to discuss those five questions, provide the panel and KAWG's perspectives on each of them, and cover the highlights of their recommendations. He didn't want to get into the text of our report in detail but suggested the members read it later. The questions are listed on pages 3-4 and the recommendations are on page 2. Bob said the recommendations were submitted to the TWG, the TWG accepted them, then forwarded them to the AMWG. The TWG also recommended the Bureau of Reclamation reconsult on the existing biological opinions.

MOTION: Incorporate KAS recommendations from TWG as outlined in Presentation Paper.

(Clarification on motion: AMWG accepted the TWG Ad Hoc Group Report and the one page list of recommendations.)

Motion seconded.

Discussion.

Public Comments: None

Voting Results: Yes = 19 No = 0 Abstaining = 0

MOTION PASSED.

FY2003 Budget – Randy Peterson distributed copies of the revised Appendix E (*Attachment 14a*) and explained how each of the expenditures in the various categories have changed from 1997 to 2002. The total costs of administration, tribal funding, programmatic agreement and experimental flows has risen from \$1.4

million for approximately the last couple of years to a little over \$2.0 million in 2003; the AMWG and TWG management portions have stayed about the same; compliance documents is about the same; contract administration dropped; and tribal consultation and funding of the river trips stayed the same. He said the difference can be found on page 2 under Programmatic Agreement activities and experimental flow funding. Reclamation is committed to completing the treatment and monitoring plan and the geomorphic effects study. These are efforts directed toward completing the HPP and moving forward with work to protect the cultural sites and dealing with adverse effects. In doing that, under line item 3A3, NPS monitoring costs will be continued and NPS monitoring of those sites both in Glen and Grand Canyon. They are re-requesting an additional \$200,000 in that area for continued work on the HPP while continuing to monitor.

Barry referred to Appendix E and explained that the reason the numbers never matched up with the work plan was because the previous version was distributed when they started preparing the budget last August. He directed the members to the Five-Year Cumulative Budget (*Attachment 14b*) and said the only difference between what was sent in the meeting packet and the current handout is the addition of Reclamation's figures. They have tried to provide the full cost accounting that Bruce Taubert has asked for and because of time constraints won't discuss it in detail but advised the members to call Vickie Kieffer if they had any questions or comments.

As Barry mentioned earlier, GCMRC started preparing the budget last August. They met with the TWG on August 7 and mailed out a little bit more information on August 21. In November the TWG reviewed a draft. On Dec. 14, they sent the revised final draft of the program to the TWG and AMWG members and because there wasn't going to be time to convene the TWG again before this meeting, they held a conference call on January 10, 2002. As a result, a number of questions came up and suggestions for edits to the text so GCMRC prepared replacement sections pages (*Attachment 15c*) for the Work Plan (*Attachment 15d*).

With respect to the 03 work plan, Barry said GCMRC really wanted to get to the long-term monitoring and pointed out that the FY 2003 has two things the members should keep in mind: 1) it covers about 31 projects and activities, 22 of these are ongoing, and adopted in either 01 or 02 and they continue for 1-3-5 years and that is covered in your work plan, and 2) nine of the projects represent new projects or new activities being proposed.

Wayne expressed concern about the \$100,000 for the KAS work and whether it is the beginning of a \$300,000 expenditure over the next several years. He questioned if outside monies were going to be sought for the \$100K or if the costs would come from power revenues. Barry explained that currently it is budgeted as \$70,000 from existing program funds and \$30,000 to be sought from outside sources. Wayne expressed concern that perhaps FWS should provide funding for this type of work. Barry explained that originally \$20,000 would come from outside funds being done by a graduate student but the TWG felt it was too important to the program to not receive higher attention and so GCMRC decided to use \$70,000 of program funds and seek outside funding for areas where they were well outside of the geographic scope of the program. Wayne said he felt it was work that should be done with FWS funds so as to not impact GCMRC's budget. Sam Spiller said that as far as he knows, the FWS doesn't normally request a line item.

Barry pointed out they have some money budgeted to look at native and non-native fish interactions and will start that work in 2002. He also said that based on the conclusions they get from the Remote Sensing Initiative, they will actually start doing the digital data collection as an operational part of the program

Barry reminded the AMWG there is a budget prioritization process built into the plan. The President's budget gets released on February 5th and there are two major things that can occur after the President's budget – 1) Celebrate because the USGS will get the appropriated funds, or 2) the President has not included this program in his budget and there is no request for appropriated funds. If additional funds are not available, then GCMRC would develop a list of activities that could be deferred until another year, discuss those deferrals with TWG and AMWG, and then in July get a recommendation about what activities should be deferred to an outyear .

MOTION: Move to adopt the FY2003 Budget (\$9,904,000).

Motion seconded.

Discussion: Wayne said he still felt that FWS should be funding the KAS work. Denny said he would commit to funding \$100,000 for this study as part of the \$775,000 for appropriations

Public Comments: None

Voting results: Yes = 19 No = 0 Abstaining = 0

MOTION PASSED.

Colorado River Management – Joe Alston said he wanted to update the AMWG on the status of a lawsuit pertaining to the Colorado River Management Plan. He passed out copies of a Summary Statement (*Attachment 15*) and provided some background information on the lawsuit. Joe said his predecessor stopped the Colorado River Management/Wilderness Planning Initiative sometime in the middle of 2000 for reasons that had to do with combining of those two plans, a monetary drain those planning issues were having on the other part of operations, the contentiousness of those issues, and the unwillingness of the parties to come together in any kind of meaningful way that the Superintendent could see some sort of clear path to a final planning initiative. That led to a couple of lawsuits that basically were asking the court to force NPS back into the planning initiative. He said he has spent much of the last seven months dealing with the settlement discussions to figure out if and why they should get back into that planning initiative, but has finally entered into a settlement agreement that restarts a planning initiative. It also says they will begin a scoping process within 120 days, hold public meetings in a series of locations (Flagstaff, Phoenix, Denver, Salt Lake City), but not limited to those locations, meet with appropriate individuals including all the federally recognized Indian tribes, look at other issues including appropriate level of visitor use, total allocation on the river, and types of use.

Report to Congress: Operations of GCD Pursuant to the GCPA of 1992. Mike said there were draft copies of the “Report to Congress: Operations of GCD Pursuant to the GCPA of 1992, Water Years 1999-2002” (*Attachment 16*) available for the members. Randy added that he would like comments back on this by February 28, 2002.

Public Outreach – Rick Gold told the members to read the memo in their book on Public Outreach (*Attachment 17*). It suggests \$43,000 be spent annually as a first cut for doing public outreach. The outreach idea goes back to May 1999 when the AMWG set up a working group. Through the efforts of Dave Cohen prodding him, Rick said he has tried to engage that group with little success and feels the AMWG needs to challenge some individuals to start that process again. He proposed the AMWG set up an ad hoc group to meet between now and the April meeting to put together an outreach plan, including some discussion on how it would be funded, and bring it to the AMWG in April. He said he would volunteer and also volunteered Barry Wirth (Public Affairs Officer in the UC Region) to be members of that ad hoc group. He also wanted staff from the Park Service, Arizona Game and Fish, and Southwest Rivers to serve on that ad hoc group. Rick said he would take names and make some personal contacts to get the group started. The following individuals volunteered: Barry Gold (GCMRC) and Sam Spiller (USFWS). Ruth Lambert commented that in the back of the GCMRC Work Plan for FY 2003, there is an item for public outreach planning so some funding is available.

Future Agenda Items Mike asked for items to be on the April 24-25, 2002, meeting:

- Western budget cycle timing proposal
- Non-native fish control
- Response to the 1999 NRC Report
- FY 2003 Budget
- Public Outreach.
- Update on Strategic Plan
- KAS recommendations
- Information Needs and the GCMRC FY 03 work plan.
- Colorado River Management Plan
- Remote sensing initiative

Next AMWG Meeting:

Wednesday, April 24, 2002 (9:30 a.m. – 5 p.m.)
Thursday, April 25, 2002 (8 a.m. – 3 p.m.)

Location:

Bureau of Indian Affairs
2 Arizona Center
400 N. 5th Street
Phoenix, Arizona

Hotel Block:

Holiday Inn Express and Suites
6th and Fillmore, Phoenix, Arizona
Phone: 602-452-2020
Rate: \$79+ tax

BLOCK CLOSES: March 23, 2002

Adjourned: 12 noon

Respectfully Submitted

Linda Whetton, USBR

General Key to Adaptive Management Program Acronyms

ADWR - Arizona Department of Water Resources	IN - Information Need (stakeholder)
AF - Acre Feet	IT - Information Technology (GCMRC program)
AGFD - Arizona Game & Fish Department	KAS - Kanab ambersnail (endangered native snail)
AGU - American Geophysical Union	KAWG - Kanab Ambersnail Work Group
AMP - Adaptive Management Program	LCR - Little Colorado River
AMWG - Adaptive Management Work Group	LCRMCP: Lower Colorado River Multi-Species Conservation Program
AOP - Annual Operating Plan	MAF - Million Acre Feet
BA - Biological Assessment	MA - Management Action
BE - Biological Evaluation	MO - Management Objective
BHBF - Beach/Habitat-Building Flow	NAAO - Native American Affairs Office
BHMF - Beach/Habitat Maintenance Flow	NAU - Northern Arizona University (Flagstaff, AZ)
BHTF - Beach/Habitat Test Flow	NEPA - National Environmental Policy Act
BIA - Bureau of Indian Affairs	NGS - National Geodetic Survey
BO - Biological Opinion	NHPA - National Historical Preservation Act
BOR - Bureau of Reclamation	NPS - National Park Service
CAPA - Central Arizona Project Assn.	NRC - National Research Council
cfs - cubic feet per second	NWS - National Weather Service
CRBC - Colorado River Board of California	O&M - Operations & Maintenance (USBR funding)
CRCN - Colorado River Commission of Nevada	PA - Programmatic Agreement
CREDA - Colorado River Energy Distributors Assn.	PEP - Protocol Evaluation Panel
CRSP - Colorado River Storage Project	Powerplant Capacity - 31,000 cfs
CWCB - Colorado Water Conservation Board	Reclamation - United States Bureau of Reclamation
DBMS - Data Base Management System	RFP - Request For Proposals
DOI - Department of the Interior	RPA - Reasonable and Prudent Alternative
EA - Environmental Assessment	SAB - Science Advisory Board
EIS - Final Environmental Impact Statement	Secretary('s) - Secretary of the Interior
ESA - Endangered Species Act	SWCA - Steven W. Carothers Associates
FACA - Federal Advisory Committee Act	TCD - Temperature Control Device (for Glen Canyon Dam water releases)
FEIS - Final Environmental Impact Statement	TCP - Traditional Cultural Property
FRN - Federal Register Notice	TES - Threatened and Endangered Species
FWS - United States Fish & Wildlife Service	TWG - Glen Canyon Technical Work Group (a subcommittee of the AMWG)
GCD - Glen Canyon Dam	UCR - Upper Colorado Region (of the USBR)
GCMRC - Grand Canyon Monitoring and Research Center	UCRC - Upper Colorado River Commission
GCNP - Grand Canyon National Park	UDWR - Utah Division of Water Resources
GCNRA - Glen Canyon National Recreation Area	USBR - United States Bureau of Reclamation
GCPA - Grand Canyon Protection Act	USFWS - United States Fish & Wildlife Service
HBC - Humpback Chub (endangered native fish)	USGS - United States Geological Survey
HMF - Habitat Maintenance Flow	WAPA - Western Area Power Administration
HPP - Historic Preservation Plan	WY - Water Year (a calendar year)
IEDA - Irrigation and Electrical Districts Association of Arizona	